field is chosen at random by each remote station and independently from each other Remote Station. There is a predefined limited number of CD fields. Two remote stations transmitting their message at the same time most likely chose a different CD field. When the base station receives the CD field, the base station reflects back, transmits back, the CD field to the remote station. The remote station reads the reflected CD field by the base station. If the reflected CD field matched the CD field the remote station transmitted, the remote station assumes that the remote station is being received correctly by the base station and continue transmitting the rest of the message, or data. If the reflected CD field from the base station did not match the one transmitted by the remote station, then the remote station assumes that there has been a collision and stops transmitting the remaining message or data.

It will be apparent to those skilled in the art that various modifications can be made to the collision detection system of the instant invention without departing from the scope or spirit of the invention, and it is intended that the present invention cover modifications and variations of the collision detection system provided they come within the scope of the appended claims and their equivalents.

We claim:

**1**. A wireless mobile station, comprising:

a transmitter;

a receiver;

a controller coupled to the receiver for responding to signals received via the receiver and coupled for controlling the transmitter, such that in operation the controller causes the mobile station to perform functions, including functions to:

(a) generate a first coded signal which does not include any message data;

(b) transmit the first coded signal to a base station, at a first separate and distinct power level;

(c) transmit a second coded signal to the base station, without any message data, at a second separate and distinct power level higher than the first separate and distinct power level, upon expiration of a predetermined interval following the transmission of the first coded signal at the first separate and distinct power level, provided that no L1 acknowledgment corresponding to the first coded signal is received at the mobile station, each of the first and second coded signals comprising one or more codes that are used to distinguish the wireless mobile station from one or more other mobile stations;

(d) cease coded signal transmission to the base station upon receiving a L1 acknowledgment corresponding to a transmitted coded signal; and

(e) transmit message data after ceasing coded signal transmission, and wherein the wireless mobile station further comprises:

an acknowledgment detector, coupled to the receiver, for detecting the L1 acknowledgment;

an encoder for encoding said message data;

a generator for generating said first coded signal and second coded signal; and

a formatter, coupled to the encoder, for formatting the encoded message data.

**2**. The wireless mobile station of claim **1**, wherein:

in operation, the controller causes the mobile station to obtain synchronization data from the base station prior to the generating of the first coded signal.

**3**. The wireless mobile station of claim **2**, wherein:

in operation, the controller causes the mobile station to transmit the first coded signal at a timing based on the synchronization data.

**4**. The wireless mobile station of claim **1**, wherein said receiver comprises:

an analog-to-digital converter for converting the received message data from an antenna to a digital signal; and

a component responsive to the digital signal from the analog-to-digital converter for processing the received message data and detecting transmitted data.

**5**. The wireless mobile station of claim **1**, wherein said transmitter comprises a digital to analog converter responsive to digital signals from the formatter.

**6**. The wireless mobile station of claim **5**, wherein:

said mobile station further comprises: a modulator; and a variable gain device, coupled to the formatter, for adjusting levels of output from the formatter before application thereof to the modulator.

**7**. The wireless mobile station of claim **1**, wherein the controller causes the mobile station to cease coded signal transmission to the base station if no L1 acknowledgment corresponding to a transmitted coded signal has been received after a maximum number of repetitions.

**8**. The wireless mobile station of claim **1**, wherein the controller causes the mobile station to further transmit additional coded signals to the base station, without any message data, at increasing separate and distinct power levels, each higher than a prior separate and distinct power level, until a maximum power level is reached.

**9**. The wireless mobile station of claim **1**, wherein the mobile station further performs functions to:

transmit a collision detection signal to the base station after receipt of the L1 acknowledgement;

receive a base station collision detection signal from the base station, the base station collision detection signal corresponding to the transmitted collision detection signal;

transmit any of data and control information to the base station, after receipt of the base station collision detection signal; and

receive any of data and control information from the base station.

**10**. The wireless mobile station of claim **1**, wherein the mobile station further performs functions to:

transmit a collision detection signal to the base station following receipt of the L1 acknowledgement; and

cease signal transmission to the base station after a period of time if no base station collision detection signal corresponding to the transmitted collision detection signal has been received from the base station.

**11**. A wireless mobile station, comprising:

a transmitter;

a receiver;

a controller coupled to the receiver for responding to signals received via the receiver and coupled for controlling the transmitter, such that in operation the controller causes the mobile station to perform functions, including functions to:

(a) generate a first coded signal which does not include any message data;

(b) transmit the first coded signal to a base station, without any message data, at a first power level;

(c) transmit a second coded signal to the base station, without any message data, at a second power level a step higher than the first power level, upon expiration of a predetermined interval following the transmission of the